AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listing of claims in the application:

1. (Currently amended) A method for phase noise suppression in a receiver section of an OFDM based WLAN operating in accordance with IEEE standard 802.11a, comprising:

RF downconverting and analog-to-digital (A/D) converting the OFDM to provide a baseband OFDM signal;

performing an FFT on the baseband OFDM signal;

estimating ICI plus noise from ~~the~~ a null subcarrier set S_N extracted from the FFT of the baseband OFDM signal;~~, and~~

estimating CPE from ~~the~~ a pilot subcarrier set S_P extracted from the FFT of the baseband OFDM signal; and

applying ~~the~~ both said estimates in MMSE equalization and data detection of ~~the~~ a data ~~subcarrier~~ sample set S_D.

2. (Currently amended) A method in accordance with claim 1, wherein performing the FFT further comprises feeding a data stream from the RF down conversion and A/D conversion of the baseband OFDM signal ~~is fed as parallel streams for~~ to the FFT, both CPE and ICI being present at the output of the FFT due to phase noise, and said both CPE and ICI estimates being obtained from outputs of said FFT ~~output~~.

3. (Currently amended) A method in accordance with claim 2, wherein the ~~said pilot subcarrier set S_P~~ estimating CPE further comprises taking the CPE estimate~~is taken from~~ after the MMSE equalization and data detection as a first data decision ~~and fed back~~ output providing decision feedback to and~~for further CPE estimation to thereby~~ further ~~improve~~ improving the CPE estimate ~~which proceeds for MMSE equalization and data detection~~.

4. (Currently amended) ~~A method in accordance with claim 3~~ A method for phase noise suppression in a receiver section of an OFDM signal based WLAN operating in accordance with IEEE standard 802.11a, comprising:

estimating ICI plus noise from the a null subcarrier set S_N extracted from the OFDM signal; and

estimating CPE from the a pilot subcarrier set S_P extracted from the OFDM signal; and

applying the said estimates in MMSE equalization and data detection of a data subcarrier sample set S_D,

wherein the a data stream from RF down conversion and A/D conversion of the OFDM signal is fed as parallel streams for FFT, both CPE and ICI being present at the output of FFT due to phase noise, and said estimates being obtained from said FFT output;

wherein the said pilot subcarrier set S_P estimating CPE further comprises taking the CPE estimates taken from after the MMSE equalization and data detection as a first decision and fed back output for providing decision feedback for further CPE estimation to thereby that further improve improves the CPE estimate which proceeds for that precedes the MMSE equalization and data detection,

wherein said estimates are used to calculate ~~the~~ equalizer coefficients for N samples of each transmitted symbol of the OFDM signal.

5. (Currently amended) A method in accordance with claim 4, wherein ~~the~~ unknown parameters in the equalizer coefficients are replaced by ~~the~~ said estimated values.

6. (Canceled).

7. (New) A method in accordance with claim 3, wherein said estimates are used to calculate equalizer coefficients for N samples of each transmitted symbol of the OFDM signal.

8. (New) A method in accordance with claim 7, wherein unknown parameters in the equalizer coefficients are replaced by said estimated values.

9. (New) A method in accordance with claim 3, wherein after providing decision feedback to the CPE estimate, outputting a final data decision based on performing the MMSE Equalization and data detection on: the ICI estimate, the data sample set S_D and the improved CPE estimate.

10. (New) A method in accordance with claim 4, wherein the estimating CPE further comprises taking the CPE estimate after the MMSE equalization and data detection as a first data decision output providing decision feedback to and further improving the CPE estimate.

11. (New) A method in accordance with claim 10, wherein after providing decision feedback to the CPE estimate, outputting a final data decision based on performing the MMSE Equalization and data detection on: the ICI estimate, the data sample set S_D and the improved CPE estimate.

12, (New) The method of claim 1, wherein the ICI estimate plus noise $\sigma_\varepsilon{}^2$ further comprises computing $\sigma_\varepsilon^2 = N_N^{-1} \sum_{k \in S_N} |R_m(k)|^2$, where $R_m(k)$ is a kth output of the FFT and N is a number of points in the FFT.

13. (New) The method of claim 1, wherein the CEP estimate $I_m(0)$ further comprises computing $I_m(0) = \dfrac{\sum_{k \in S_P} R_m(k) X_m^*(k) H_m^*(k)}{\sum_{k \in S_P} |X_m(k) H_m(k)|^2}$, where $R_m(k)$ is a kth output of the FFT, $X_m(k)$ is a transmitted symbol and $H_m(k)$ is a channel impulse response and $(\cdot)^*$ represents a conjugae operation.

14. (New) The method of claim 1, wherein generating the MMSE equalizer output $C_m(k)$ and estimating a transmitted data sample $\hat{X}_m(k)$ further comprises computing

$C_m(k) = \dfrac{I_m^*(0)H_m^*(k)}{|I_m(0)H_m(k)|^2 + \sigma_\varepsilon^2(m)/E_x}$ and $\hat{X}_m(k) = R_m(k) * C_m(k)$, respectively, where $I_m(0)$ is the CEP estimate, $H_m*(k)$ is a channel impulse response, $R_m(k)$ is a kth output of the FFT, σ_ε^2 is an ICI estimate plus noise and $(\cdot)*$ represents a conjugae operation.

15. (New) The method of claim 3, wherein providing decision feedback to further improve the CPE estimate comprises computing $I_m(0)\gamma I_m(0) + (1-\gamma)I_m(0)$, where $I_m(0)$ is the CEP estimate and γ is a forgetting factor.